United States Department of the Interior

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In Reply Refer To:
FWS/R2/OKES/
21440-2010-F-0213

September 15, 2010

John D. Hartley
Environmental Program Manager
Oklahoma Division
Federal Highway Administration
5801 N Broadway Est., Ste. 300
Oklahoma City, Oklahoma 73118

Dear Mr. Hartley:

This letter transmits the U.S. Fish and Wildlife Service's (Service) Biological Opinion (Opinion) pursuant to section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), on the Oklahoma Department of Transportation's (ODOT) proposed State Highway 3W (SH-3) replacement over the Canadian River (River) near Asher, Oklahoma, [J/P 20309(04)] and its effects on federally-listed species within the project area. The Federal Highway Administration's (FHWA) funding and oversight of the proposed project constitutes the Federal action applicable to this Opinion.

In the May 4, 2010, Biological Assessment prepared for the FHWA, the ODOT determined that the project will not likely adversely affect the federally-listed threatened piping plover *Charadrius melodus*, the endangered whooping crane *Grus americana,* and the endangered interior least tern *Sterna antillarum.* Piping plovers and whooping cranes could potentially forage within the project area; however, it is unlikely that the species would nest along the River, particularly within the project area. Therefore, we concur that the proposed project will not likely adversely affect the piping plover and the whooping crane.

The interior least tern (ILT) is known to utilize the River in Oklahoma for nesting. Breeding pairs of ILTs have been observed within 1.67 river miles (2.69 km) upstream and 2.66 miles (4.28 km) downstream of the existing bridge. ODOT will survey during the month of June prior to and within one year of the construction. Additionally, follow-up nesting surveys will be conducted in case flooding occurs and during subsequent nesting seasons, if the project construction ends after April 30 the following year. Construction activities will be prohibited within 0.25 miles (0.40 km) of any active nesting colony for the duration of the nesting season (June 1 through August 31). Surveys should be conducted by a qualified biologist experienced in bird identification. Additionally, pictures and descriptions of the ILT should be posted on site throughout construction, and personnel should be instructed to notify ODOT and the Service if an ILT is seen nesting within 0.25 miles (0.40 km) of the construction site. If the survey yields no observations of ILTs within the project area, or if construction activities are restricted to areas outside of the 0.25 mile (0.40 km) buffer around nesting ILTs, we will concur that the proposed project is not likely to adversely affect the ILT. However, until those surveys are conducted and the results of those surveys are submitted to the Service for review, we cannot provide our concurrence. If project construction cannot avoid nesting ILTs, ODOT should notify and initiate further consultion with the Service.

The ODOT also determined that the project may affect the federally-listed threatened Arkansas River shiner (ARS) *Notropis girardi*. The Service concurs with that determination, and the following Opinion includes reasonable and prudent measures and terms and conditions to minimize effects to the ARS. Additionally, this Opinion provides the FHWA and ODOT an incidental take statement for ARS specimens that are likely to be taken as a result of the proposed project.

The following Opinion emphasizes anticipated effects of the proposed action on federally-listed species and is based on the best available scientific and commercial information, including site visits, ODOT's biological assessment, Service files, pertinent literature, discussions with recognized species authorities, and other reliable sources. A complete administrative record of this consultation is on file in the Oklahoma Ecological Services Field Office (OESFO) in Tulsa.

Consultation History

Informal consultation between the OKESFO and the ODOT began in May 2009, with a phone call between Angela Brown Burgess from the OKESFO and Julianne Hoagland from ODOT. Potential conservation measures for the ARS were discussed at that time. The OKESFO received a draft Biological Assessment on May 20, 2009, and began reviewing the preliminary project information. A meeting was held at the OESFO with Angela Brown Burgess, Daniel Fenner, and Kevin Stubbs from the OKESFO and Julianne Hoagland and Tiffany Whitsett of ODOT on August 25, 2009, to discuss potential impacts to the ARS and the ILT. A draft document including project description, potential impacts, and anticipated terms and conditions was received by Angela Brown Burgess on February, 2, 2010. The FHWA's May 4, 2010, request for formal consultation was received on May 7, 2010, at which time formal consultation was initiated.

Description of the Proposed Action

The ODOT is proposing to replace the existing State Highway 3W (SH-3W) bridge over the Canadian River (River) in Pontotoc and Pottawatomie counties. The project is located within Section 30 of T6N R4E and Section 25 of T6N R3E, beginning approximately 1 mile south of the town of Asher, Oklahoma, and extending south approximately 0.71 miles (Figure 1). The center of the existing SH-3W Canadian River bridge lies at 34.9643°N, -96.9298°W (NAD83).

Recent inspections of the existing 1959 bridge indicate that it is deteriorating, structurally deficient, and does not meet current design and safety standards for state highways. The existing bridge is a 2-lane 1,356-ft (413 m) steel I-beam span bridge would be replaced with a new 4-lane 1,445-ft (440 m) concrete beam span bridge structure. The approach roadway currently consists of two 12 ft (3.7 m) lanes with 10 ft (3.0 m) paved shoulders and would be replaced with four 12 ft (3.7 m) lanes with 10 ft (3.0 m) paved shoulders. The approach roadway and the proposed bridge structure would be constructed on essentially the existing alignment, with the construction footprint of the new wider structure offset to the west.

The proposed bridge would be constructed in two phases. The existing bridge would carry traffic while the first phase of new bridge construction is accomplished immediately adjacent to and on the west side of the existing bridge. Traffic would then be moved onto the new structure. The existing bridge would be replaced during the second phase of construction. The entire project would require approximately 450 calendar days to complete.

The project area includes approximately 3,570 linear ft (1088 m) of SH-3W, including approximately 1451 ft (442.26 m) of bridge over the River, and would require new permanent right-of-way (ROW) and temporary easement. The proposed deck width is 70 ft (21.34 m). Although the new bridge and approaches would be wide enough to accommodate four lanes of traffic, it would be striped to only two lanes. There would be 11 new piers supported by four columns each, constructed in two phases of two columns in each phase. The columns would be approximately five feet in diameter. The bridge spans would be 125 ft (38.1 m) in length, except for those at each end of the bridge which would be 100.83 ft (30.73 m) each.

The new columns would be constructed as drilled shafts. Columns for piers 6 through 10 would be within the ordinary high water mark (OHWM), while columns for piers 1 through 5 and 11, as well as abutments 1 and 2 would be constructed outside of the OHWM. Shaft drilling is accomplished by placing drilling equipment adjacent to the column location and drilling through underlying substrates. Within the OHWM, this would require the construction of drill pads that are approximately 10 ft (3.05 m) wide at the top extending from work roads that would likely run parallel to the bridge. Shaft drilling generates a slurry mixture of water and substrate that can create turbid stream conditions if released to flowing waters. Therefore, sediment created as a result of the drilling process would be removed and disposed of at an upland location outside of the river's riparian zone and the designated critical habitat. Following shaft drilling, concrete would be poured to form the column. Work roads that would need to be placed within the Canadian River channel below the OHWM would not extend across more than 50% of the flowing channel at any given time. Construction of the new bridge deck would involve placing beams and pre-stressed panels in the new location.

Removal of the existing bridge structure would involve breaking the existing bridge deck into pieces. Demolition of the bridge deck would be accomplished from the existing deck, and the broken pieces of the deck would be allowed to fall into the Canadian River channel. The broken pieces would then be collected from the river channel. The existing piers within the OHWM would be cut off at the drill shafts slightly below grade, broken into large chucks and removed from the channel. It is anticipated that it would take two separate actions to demolish the existing bridge. Demolition of the portion of the bridge outside of the OHWM should take approximately 10 days, while the portion within the OHWM is proposed to take 12 days.

The total area of disturbance (including work roads, drilling pads, equipment placement, bank protection and fallen debris) in the area of normal high water would be approximately 4.51 acres (1.83 ha). All work road materials would be removed from the channel following the completion of the new bridge construction and the demolition of the existing bridge. The removal and construction of piers

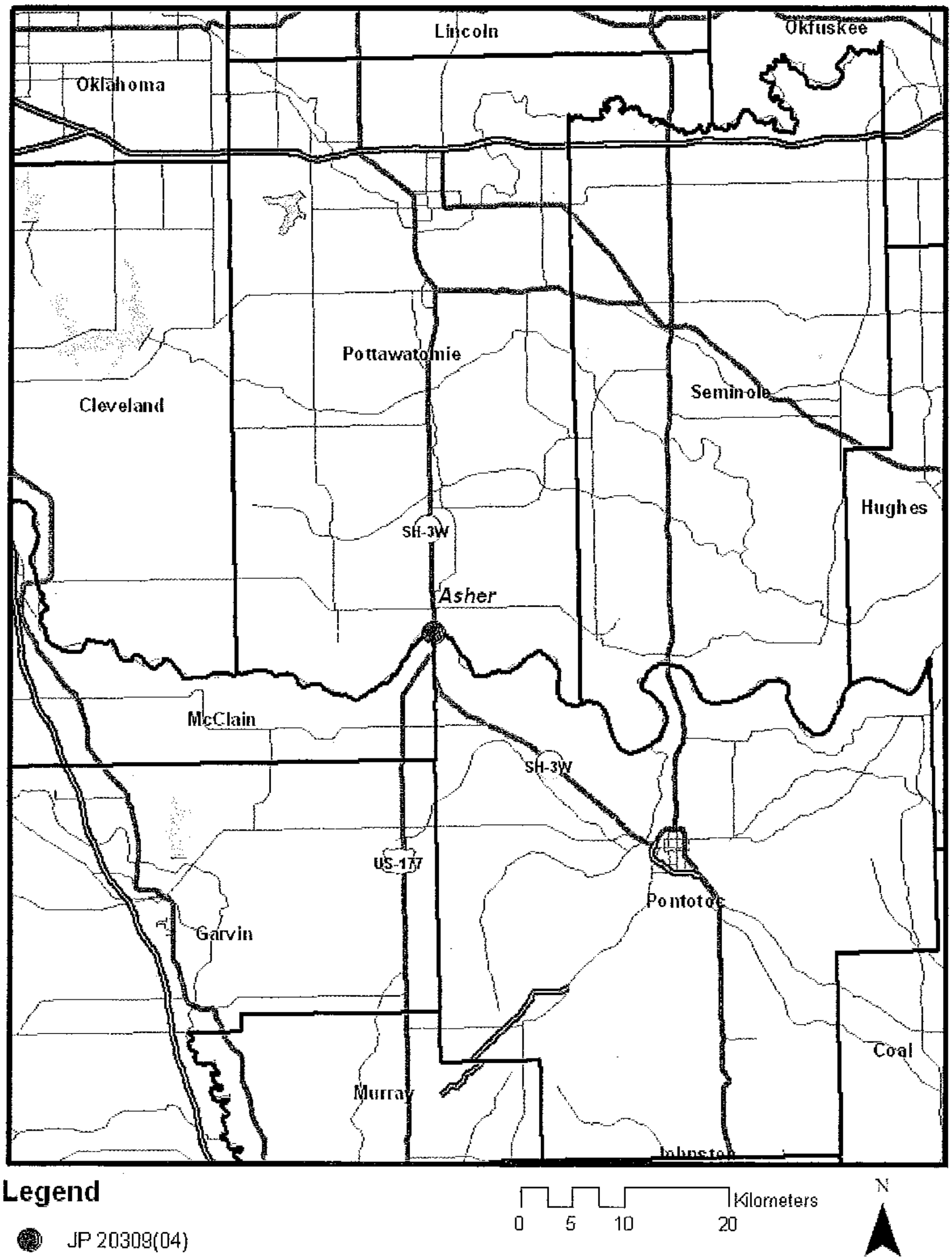

Figure 1. Pontotoc County JP 20309(04) SH-3W Bridge Replacement General Location

and columns within the OHWM of the River would occur outside of the peak spawning and larval/fry development season of the Arkansas River shiner (May 1-
August 15).

Status of the affected species

The ARS is a small, robust minnow with a small, dorsally flattened head, rounded snout, and small subterminal mouth (Miller and Robison 1973, Robison and Buchanan 1988). Dorsal coloration tends to be light tan, with silvery sides gradually grading to white on the belly. Adults attain a maximum length of about 2 in. Dorsal, anal, and pelvic fins all have eight rays, and there is usually a small, black chevron present at the base of the caudal fin. The ARS was listed as a threatened species on November 23, 1998, based on reductions of the species' range and numbers due to habitat destruction and modification, stream dewatering, diversion of surface water, groundwater pumping, construction of impoundments, and water quality degradation (USFWS 1998).

On April 4, 2001, critical habitat for this species was designated (66 *FR* 18002). This critical habitat designation was vacated as a result of a September 2003 Memorandum Opinion of the U.S. District Court of the District of New Mexico, and on October 6, 2004, a new critical habitat designation for the Arkansas River basin population of the ARS was proposed (69 *FR* 59859). A final designation of critical habitat for the Arkansas River basin population of the ARS was published on October 13, 2005 (70 *FR* 59808), to include the River within the proposed action area.

The ARS was first reported in 1926 from the Cimarron River northwest of Kenton, Cimarron County, Oklahoma (Hubbs and Ortenburger 1929). Historically, the ARS was widespread and abundant throughout the western portion of the Arkansas River basin in Kansas (KS), New Mexico (NM), Oklahoma (OK), and Texas (TX). This species has subsequently disappeared from over 80 percent of its historical range and is now almost entirely restricted to about 508 miles of the River in OK, TX, and NM. A non-native, introduced population of the ARS occurs in the Pecos River in NM (Bestgen *et al.* 1989). That population is not protected under the Endangered Species Act of 1973 (ESA).

The ARS is now believed to be extirpated from the entire Arkansas River. An extremely small population may still persist in the Cimarron River in OK and KS, based on the collection of only 22 individuals since 1985. A remnant population also may persist in the Beaver/North Canadian River of OK, based on collection of only four individuals since 1989 (Larson *et al.* 1991; Pigg 1991). However, samples collected by Wilde (2002) at 10 sites along the Beaver/North Canadian River in 2000 and 2001 found no ARS, suggesting that the ARS may be extirpated from that river. An accurate assessment of ARS populations in the Cimarron and Beaver/North Canadian Rivers is difficult because the populations are likely so small that individuals may escape detection during routine surveys.

<u>Habitat</u>

The ARS historically inhabited the main channels of wide, shallow, sandy-bottomed rivers and larger streams of the Arkansas River basin (Gilbert 1980). Adults are uncommon in quiet pools or backwaters, and almost never occur in tributaries having deep water and bottoms of mud or stone (Cross 1967). Polivka and Matthews (1997) suggested that juvenile ARS associate most strongly with current, conductivity (related to total dissolved solids), and backwater and island habitat types. Cross (1967) believed that adults preferred to orient into the current on the lee sides of transverse sand ridges and feed upon organisms washed downstream.

Matthews (1987) classified several species of fishes, including the ARS, based on their tolerance for adverse conditions and selectivity for physicochemical gradients. The ARS was described as having a high thermal and oxygen tolerance, indicating a high capacity to tolerate elevated temperatures and low dissolved oxygen concentrations (Matthews 1987). Observations from the River in NM and TX revealed that dissolved oxygen concentrations, conductivity, and pH rarely influenced habitat selection by the ARS (Wilde *et al.* 2000). ARS specimens were collected over a wide range of conditions–water temperatures from 32.7 to 98.2° Fahrenheit (0.39 to 36.78° Celsius), dissolved oxygen from 3.4 to 16.3 parts per million, conductivity (total dissolved solids) from 0.7 to 14.4 millisiemens per centimeter, and pH from 5.6 to 9.0.
In the River of central OK, Polivka and Matthews (1997) found that ARS exhibited only a weak relationship between the environmental variables they measured and the occurrence of the species within the stream channel. Water depth, current, dissolved oxygen, and sand ridge and midchannel habitats were the environmental variables most strongly associated with the distribution of ARS within the channel. Similarly, microhabitat selection by ARS in the River of NM and TX was influenced by water depth, current velocity, and, to a lesser extent, water temperature (Wilde *et al.* 2000). The ARS specimens generally occurred at mean water depths between 6.6-8.3 in (17 and 21 cm) and current velocities between 11.7 and 16.4 in (29.7 and 41.6 cm) per second. Juvenile ARS associated most strongly with current, conductivity, and backwater and island habitat types (Polivka and Matthews 1997).

Wilde *et al.* (2000) found no obvious selection for, or avoidance of, any particular habitat type (*i.e.*, main channel, side channel, backwaters, and pools) by ARS. The ARS specimens did tend to select side channels and backwaters slightly more than expected based on the availability of these habitats (Wilde *et al.* 2000). Likewise, they appeared to make no obvious selection for, or avoidance of, any particular substrate type. Substrates in the River in NM and TX were predominantly sand; however, the ARS was observed to occur over silt slightly more than expected based on the availability of this substrate (Wilde *et al.* 2000).

Food Habits/Feeding Behavior

The ARS is believed to be a generalized forager and feeds upon both items suspended in the water column and items lying on the substrate (Jimenez 1999, Bonner *et al.* 1997). In the River of central OK, Polivka and Matthews (1997) found that gut contents were dominated by sand/sediment and detritus (decaying organic material), with invertebrate prey being an incidental component of the diet. In the River of NM and TX, the diet of ARS was dominated by detritus, invertebrates, grass seeds, and sand and silt (Jimenez 1999). Invertebrates were the most important food item, followed by detrital material.

Terrestrial and semiaquatic invertebrates were consumed at higher levels than were aquatic invertebrates (Jimenez 1999). With the exception of the winter season, when larval flies were consumed much more frequently than other aquatic invertebrates, no particular invertebrate taxa dominated the diet (Bonner *et al.* 1997). Fly larvae, copepods, immature mayflies, insect eggs, and seeds were the dominant items in the diet of the nonnative population of the ARS inhabiting the Pecos River in NM (Keith Gido, University of Oklahoma, *in litt.* 1997).

Reproduction

Successful reproduction by the ARS appears to be strongly correlated with streamflow. Moore (1944) believed the ARS spawned in July, usually coinciding with elevated flows following heavy rains associated with summertime thunderstorms. Bestgen *et al.* (1989) found that spawning in the nonnative population of ARS in the Pecos River of NM generally occurred in conjunction with releases from Sumner Reservoir. However, recent studies by Polivka and Matthews (1997) and Wilde *et al.* (2000) neither confirmed nor rejected the hypothesis that elevated streamflow triggered spawning in the ARS.

ARS specimens are open-water, broadcast spawners that release their eggs and sperm over an unprepared substrate (Platania and Altenbach 1998, Johnston 1999). Examination of ARS gonadal development between 1996 and 1998 in the River of NM and TX demonstrated that the species undergoes multiple, asynchronous spawns in a single season (Wilde *et al.* 2000). The ARS appears to be in peak reproductive condition throughout the months of May, June, and July (Wilde *et al.* 2000, Polivka and Matthews 1997); however, spawning may occur as early as April and as late as September. ARS specimens may, on occasion, spawn in standing waters (Wilde *et al.* 2000), but it is unlikely that such events are successful.

Both Moore (1944) and Platania and Altenbach (1998) described behavior of ARS eggs. The fertilized eggs are nonadhesive and semibuoyant. Platania and Altenbach (1998) found that spawned eggs settled to the bottom of the aquaria where they quickly absorbed water and expanded. Upon absorbing water, the eggs became more buoyant, rose with the water current, and remained in suspension. The eggs would sink when water current was not maintained in the aquaria. This led Platania and Altenbach (1998) to conclude that the ARS and other plains fishes likely spawn in the upper to mid-water column during elevated flows. Spawning under these conditions would allow the eggs to remain suspended during the 10- to 30- minute period the eggs were non-buoyant. Once the egg became buoyant, it would remain suspended in the water column as long as current was present.

In the absence of sufficient streamflows, the eggs would likely settle to the channel bottom, where silt and shifting substrates would smother the eggs, hindering oxygen uptake and causing mortality of the embryos. Spawning during elevated flows appears to be an adaptation that likely increases survival of the embryo and facilitates dispersal of the young. Assuming a conservative drift rate of 3 km/hour, Platania and Altenbach (1998) estimated that the fertilized eggs could be transported 45-89 mi (72-144 km) before hatching. Developing larvae could then be transported up to an additional 134 mi (216 km) before they were capable of directed swimming movements. Bonner and Wilde (2000) speculate that 135 mi (218 km) may be the minimum length of unimpounded river that allows for the successful completion of ARS life history, based on their observations in the River in NM and TX.

Rapid hatching and development of the young is likely another adaptation in plains fishes that enhances survival in the harsh environments of plains streams. ARS eggs hatch in 24-48 hours after spawning, depending upon water temperature (Moore 1944, Platania and Altenbach 1998). The larvae are capable of swimming within 3-4 days; they then seek out low-velocity habitats, such as backwater pools and quiet water at the mouths of tributaries where food is more abundant (Moore 1944).

Evidence from Wilde *et al.* (2000) indirectly supports the speculation by Cross *et al.* (1985) that the ARS initiates an upstream spawning migration. Whether this represents a true spawning migration or just a general tendency in these fish to orient into the current and move upstream, perhaps in search of more favorable environmental conditions, is unknown (Wilde *et al.* 2000). Regardless, strong evidence suggested the presence of a directed, upstream movement by the ARS over the course of a year.

Age and Growth

Maximum longevity is unknown, but Moore (1944) speculated that the species' life span is likely less than 3 years in the wild. The age structure of ARS collected from the Pecos River in NM included three, and possibly four, age classes (Bestgen *et al.* 1989). The majority of the fish captured were juveniles (Age-0) and first-time spawners (Age-I). Most of the fish in spawning condition were Age-I. Bestgen *et al.* (1989) thought mortality of postspawning fish was extremely high based on the absence of Age-I and older fish from collections made after the spawning period (late July and August).

Diseases, Parasites, and Predation

No studies have been conducted on the impact of disease or predation upon the ARS; therefore, the significance of these threats upon existing populations is unknown. There is no direct evidence to suggest that disease threatens the continued existence of the species. Disease is not likely to be a significant threat except in isolated instances or under certain habitat conditions, such as crowding during periods of reduced flows, or episodes of poor water quality (e.g., low dissolved oxygen or elevated nutrient levels). During these events, stress reduces resistance to pathogens and disease outbreaks may occur. Parasites and bacterial and viral agents are generally the most common causes of mortality. Lesions caused by injuries, bacterial infections, and parasites often become the sites of secondary fungal infections.

Some predation of ARS by largemouth bass *Micropterus salmoides*, green sunfish *Lepomis cyanellus*, channel catfish *Ictalurus punctatus*, and other fish species undoubtedly occurs, but the extent is unknown. Predation by aquatic birds (e.g., terns, herons, and egrets) and aquatic reptiles (e.g., snakes and turtles) also may occur. Plains fishes have evolved under adverse conditions of widely fluctuating, often intermittent flows, high summer temperatures, high rates of evaporation, and high concentrations of dissolved solids. These conditions are not favored by most large predaceous fish and tend to preclude existence of significant populations of these species. However, alteration of historic flow regimes and construction of reservoirs have created favorable conditions for some predatory species such as white bass *Morone chrysops* and striped bass *M. saxatilis*. State and Federal fish and wildlife management agencies, through cooperative efforts to develop sport fisheries in these reservoirs, have facilitated expansion of the distributions of some predatory species. The impact of predation to the species is likely to be localized and insignificant, particularly where habitat conditions upstream of mainstem reservoirs are not favorable to the long-term establishment of abundant predatory fish populations.

Status of the Affected Critical Habitat

Critical habitat for the ARS is designated for portions of the Canadian and Cimarron Rivers in Oklahoma (USFWS 2005). This includes the main channel of the Canadian River, extending upstream from the Indian Nation Turnpike Canadian River bridge in Pittsburg/McIntosh counties to the SH-33 Canadian

River bridge in Custer County. The critical habitat encompasses the Canadian River channel within the line of bankfull discharge, as well as 300 linear feet of riparian zone (measured laterally from the line of bankfull discharge) adjacent to and on each side of that channel.

Environmental Baseline

The environmental baseline is predicated upon an analysis of the accumulated effects of past and recent or ongoing human-induced and natural factors that have lead to the current status of the affected listed species and its habitat. The environmental baseline incorporates: 1) past and present impacts of all federal, state, or private actions or other human activities affecting the species; 2) anticipated impacts to the affected species from all proposed federal projects that have already undergone formal or early section 7 consultations; and 3) impacts of non-federal actions contemporaneous with the consultation in process.

Description of the Action Area

The action area for the proposed project includes the area affected by the construction of the roadway, bridge and approaches where direct and indirect effects to federally-listed species may reasonably be expected to occur. Given that the proposed project occurs within the River flood plain and channel, and that the natural and artificial drainage features within the project site flow into the River within the site, the action area for the proposed action includes a 3,570 ft (1,088 m) segment of SH-3W and extends outward to all areas directly affected by construction activities, including indirect effects to the River downstream of the bridge. This area encompasses a segment of the river which is known to be occupied by the ARS. The primary channel of the River adheres to the north back of the channel, and an extensive area of unconsolidated shore occurs to the south of the main channel. Much of this sandy shoreline would be submerged during periods of high flow. South of the main channel, several narrow overflow channels bordered by woody wetland vegetation cross through the river's riparian zone.
The action area occurs within the Northern Cross Timbers ecoregion (Woods et al. 2005) and Post Oak-Blackjack Forest Game Type (Duck and Fletcher 1943). This region separates the eastern deciduous forests from the drier western grasslands (Duck and Fletcher 1943, Woods et al. 2005). The rolling and dissected terrain is naturally covered by a mosaic of oak savanna, scrubby oak forest, eastern red cedar (*Juniperus virginiana*), and tall grass prairie (Woods et al. 2005, Duck and Fletcher 1943). On porous, course-textured soils, the dominant natural vegetation includes post oak *Quercus stellata*, blackjack oak *Q. marilandica*, and little bluestem *Schizachyrium scoparium* with black hickory *Carya texana*, black oak *Q. velutina*, persimmon *Diospyros virginiana*, redbud *Cercis canadensis*, sumac *Rhus glabra*, and increasingly, eastern red cedar are also prevalent. Tall grass prairie occurs on fine-textured soils and dominants include big bluestem *Andropogon gerardii*, little bluestem, switchgrass *Panicum virgatum*, and Indiangrass *Sorghastrum nutans*. Native riparian areas are dominated by hackberry *Celtis occidentalis*, American elm *Ulmus americana*, post oak, black walnut *Juglans nigra*, green ash *Fraxinus pennsylvanica*, willow *Salix* sp., sycamore *Platanus occidentalis*, and eastern cottonwood *Populus deltoids* (Woods et al. 2005). Streams are typically shallow and have sandy substrates.

The environmental study area is largely occupied by the existing ROW and cultivated hay meadows. Some portions of the existing ROW are not regularly mowed or otherwise maintained. The area of maintained (frequently mowed) ROW is vegetated with native and introduced grasses and forbs. Bermuda grass *Cynodon dactylon*, green bristlegrass *Setaria viridis*, crabgrass *Digitaria cilaris*, Heller's rosette grass *Dichanthelium oligosanthes*, downy brome *Bromus tectorum*, common yarrow *Achillea millefolium*, tuberous desert-chicory *Pyrrhopappus grandiflorus*, common yellow oxalis *Oxalis stricta* and shepherd's purse *Capsella bursa-pastoris* are the most common species, with scattered individuals of little bluestem, purpletop tridens *Tridens flavus* and Johnsongrass *Sorghum halepense* throughout the area.

The area north of the River is largely occupied by brushy upland forest, with scattered mowed areas associated with private drives, field entrances and utility ROW. The steeply-inclined north bank of the River and the wooded areas to the north are vegetated with saplings, small and medium-sized trees of Shumard's oak *Q. shumardii*, post oak, blackjack oak, chinkapin oak *Q. muehlenbergii*, eastern red cedar, and scattered sugarberry *Celtis laevigata*, American elm, mimosa *Albizia julibrissin*, and redbud. Substantial portions of the existing ROW to the north of the River (particularly on steeper slopes) are not regularly mowed or otherwise maintained, and are similarly vegetated. Scattered open areas associated with private drives, field entrances, and utility ROW are vegetated with little bluestem, purpletop tridens, Johnsongrass, Bermuda grass, hairy grama *Bouteloua hirsute*, Indiangrass, and scattered ramets of roughtleaf dogwood *Cornus drummondii*, gooseberry *Ribes odoratum*, and smooth sumac. Other herbaceous species observed included Canada wildrye *Elymus canadensis*, inland sea oats *Chasmanthium latifolium*, witchgrass *Panicum capillare*, showy chloris *Chloris virgata*, red lovegrass *Eragrostis secundiflora*, rice cutgrass *Leersia oryzoides*, great ragweed *Abrosia trifida*, Indian currant *Symphoricarpos orbiculatus*, cocklebur *Xanthium strumarium*, goldenrod *Solidago* sp., silverleaf nightshade *Solanum elaeagnifolium*, sandbur *Cenchrus spinifex*, horsemint *Monarda punctata*, and curly dock *Rumex crispus*.

The area south of the river is characterized as riparian forest, wetland, and maintained grass hay meadow on former cropland. Much of the area lying between the south end of the bridge and the primary channel of the River is occupied by an unconsolidated shore of sand and silt, and by riparian woodland. The shoreline is bordered by a narrow fringe of shrubland dominated by sandbar willow *Salix exigua*. South of this area occurs saplings, small and medium-sized trees of American sycamore, box elder *Acer negundo*, green ash, eastern cottonwood, American elm *Ulmus americana*, sugarberry *Celtis laevigata*, black walnut, red mulberry *Morus rubra* and black willow *Salix nigra* with a vigorous undergrowth of grasses, forbs and shrubs. Herbaceous species include horse-tail *Equisetum hyemale*, sumpweed *Iva annua*, pale smartweed *Polygonum lapathifolium*, snout smartweed *Polygonum densiflorum*, frog-fruit *Lippia lanceolata*, crow-foot caric sedge *Carex crus-corvi*, cattail *Typha latifolia*, and spikerush *Eleocharis* sp. Vines present include poison ivy *Rhus radicans*, greenbriar *Smilax bona-nox*, grapevine *Vitis* sp., and Virginia creeper *Parthenocissus quinquefolia*. Several small drainage features flanked by herbaceous and woody wetland transit this riparian woodland. Those areas south of the south end of the existing SH-3W bridge (and on both sides of the highway) are occupied by gravel drives associated with residences and oil field locations, and cultivated grass hay meadows; Bermuda grass is the dominant species, and very little other vegetation occurs in these areas.

Status of Species within the Action Area

The action area for the proposed action includes the 3,570 ft segment of SH-3W depicted in the preliminary plan sheets and extends outward to all areas directly affected by construction activities and includes indirect effects to the River downstream of the bridge. This area encompasses a segment of the

River which is known to be occupied by the ARS and lies within the area designated as critical habitat. The best available information indicates that members of this species commonly occur in the River within, and in close proximity to, the action area. Sampling conducted in the River at the State Highway 102 crossing upstream of the project area (conducted in 2010) and at the U.S. Highway 377 crossing downstream of the project area (conducted in 2010) yielded individuals of this species (FWS unpublished data).

Repeated sampling at several sites in the River in OK, both above and below the proposed project site, and occurring between 1976 and 1989 consistently revealed the ARS to be present in the River (Pigg 1991). The ARS is currently thought to be confined to the River in NM, OK and TX, although small populations may occur in the Cimarron and perhaps the North Canadian / Beaver Rivers 69 *FR* 59859.

Status of the Critical Habitat within the Action Area

Within the proposed new ROW, the amount of critical habitat is 7.06 acres (2.86 ha), including 3.10 acres (1.25 ha) of bankfull discharge river channel and 3.95 acres (1.60 ha) of riparian zone. On the north side of the river, there are approximately 1.98 acres (0.80 ha) of designated critical habitat within the new ROW. The designated critical habitat is currently vegetated with native and introduced grasses and forbs; including Bermuda grass, green bristlegrass, crabgrass, Heller's rosette grass, downy brome, common yarrow, tuberous desert-chicory, common yellow osalis, shephard's purse, and scattered individuals of little bluestem, purpletop tridens, and Johnsongrass. Additionally, brushy upland forest vegetated with saplings, small and medium-sized trees of Shumard's oak, post oak, blackjack oak, chinkapin oak, eastern red cedar, sugarberry, American elm, mimosa, and redbud occurs in critical habitat, along with an herbaceous layer that includes Canada wildrye, inland sea oats, witchgrass, showy chloris, red lovegrass, rice cutgrass, great ragweed, Indian currant, cocklebur, goldenrod, silverleaf nightshade, sandbur, horsemint, and curly dock. On the south side of the river, there are approximately 1.974 acres of critical habitat within the new ROW. A shrub wetland area within the critical habitat is dominated by sandbar willow, horsetail, pale smartweed, and frog-fruit. A riparian woodland south of this wetland contains small saplings, small and medium-sized trees of American sycamore, box elder, green ash, eastern cottonwood, American elm, sugarberry, black walnut, red mulberry, and black willow. An herbaceous layer includes sumpweed, snout smartweed, crow-foot caric sedge, cattail, and spikerush. Vines include poison ivy, greenbrier, grapevine, and Virginia creeper.

Factors Affecting Species within the Action Area

Reservoir construction is the most widespread cause of habitat loss for the ARS. Numerous multipurpose impoundments, including three mainstem reservoirs on the Arkansas River (John Martin, Kaw, and Keystone) and four mainstem reservoirs on the River (Conchas, Ute, Meredith, and Eufaula) have been constructed within the Arkansas River basin. Other large mainstem impoundments also have been constructed within the historical range of the ARS, Optima and Canton reservoirs on the North Canadian River, and Great Salt Plains Reservoir on the Salt Fork of the Arkansas River. All of these impoundments have inundated, dewatered, fragmented, or otherwise directly altered considerable sections of riverine habitat once inhabited by ARS. ARS populations persist only below Ute Reservoir in NM and Lake Meredith in TX (Bonner *et al.* 1997; Eric Altena, *in litt.* 1993; Larson *et al.* 1991; Pigg 1991).

Inundation following impoundment eliminated ARS spawning habitat, isolated populations, and favored increased abundance of predators both upstream and downstream of these reservoirs. Water releases from impoundments may be infrequent or non-existent in the western portions of the Arkansas River basin causing streams to be dewatered for considerable distances downstream of the reservoir. Impoundments also function as barriers, fragmenting populations and habitat into smaller, more isolated units. These fragmented, smaller sections may affect the ARS's ability to reproduce. Wilde *et al.* (2000) suggested that an unimpounded stretch of the river approximately 137 miles (220.5 km) long may be necessary for the ARS to complete its life cycle. Additionally, these fragmented sections are more likely to be affected by influences from external factors (*e.g.*, localized drought, water withdrawals, permitted and unpermitted wastewater discharges). Once isolated, other aggregations of ARS can no longer disperse into these reaches and help maintain or restore populations of ARS there.

Altered flows downstream of Lake Meredith, and to a lesser extent below Ute Reservoir, have considerably changed the morphology of the River and have reduced the extent of suitable habitat for ARS. Stinnett *et al.* (1988) examined a 230 mile (370.2 km) stretch of the River and associated 179,495 acres (72,639 ha) of floodplain between the western OK border and the western Pottawatomie County line near Norman, OK. Between 1955 and 1984, the amount of riverine wetlands (shoreline and open water) decreased by about 50 percent. Sandbar acreage alone had been reduced by 54 percent. Wetland and associated floodplain changes were principally the result of hydrological modifications due to the influence of Lake Meredith (Stinnett *et al.* 1988). The resulting reduction in significant scouring flows within the study reach permitted the encroachment of woody vegetation into the channel, reducing channel width by almost 50 percent since 1955.

Although the core population of ARS persists in the River, the reduction in available habitat downstream of Ute Reservoir and Lake Meredith likely has suppressed ARS populations in affected reaches. Habitat alterations associated with reduced flows downstream of Lake Meredith are considered to be a significant, ongoing threat to the long term survival of the ARS within the River.

In addition to altered stream flows from reservoir management, the decline of ARS throughout its historical range also may primarily be attributed to destruction and modification of habitat by one or more of the following: stream channelization, streamflow alteration and depletion, and, to a lesser extent, water quality degradation.

Channelization causes a variety of changes in natural stream channels, including altering channel shape, form, and width, water depth, substrate type, stream gradient, streamflow velocity, and the hydroperiod (Simpson *et al.* 1982). Channelization of the Arkansas River has permanently altered and eliminated suitable habitat for the ARS and is largely responsible for the extirpation of the ARS within the State of Arkansas. This channelization also has contributed to the decline of the species in OK. In the Arkansas River downstream of Muskogee, Oklahoma, ARS were last observed in 1985 (Pigg 1991).

Surface water withdrawals constitute a small percentage of the total water used within the western sections of the historical range of the ARS, primarily because of the limited number of impoundments and elevated levels of chlorides. However, surface flows in the Cimarron River upstream of Waynoka, Oklahoma are affected by several diversions for irrigation. Within the western portion of the Arkansas River basin, groundwater is an extremely important water source due to limited surface supplies and lowered precipitation during the summer months (Oklahoma Water Resources Board 1980, 1990, 1997; Kansas Water Office and Kansas Division of Water Resources 1992; Texas Water Development Board 1990; Stoner 1985; Texas Department of Water Resources 1984). For example, withdrawals from western Oklahoma aquifers account for about 80 percent of the State's total groundwater usage (Oklahoma Water Resources Board 1990).

Irrigation of croplands in the basin is the dominant use of this water. Withdrawal from the High Plains aquifer and from alluvial and terrace deposits associated with the major river systems in conjunction with diversion of surface water has affected streamflow in several of the major tributaries.

The River traverses oil and gas producing areas and receives municipal sewage effluent and manufacturing return flows, all of which can degrade existing water quality (Texas Department of Water Resources 1984). Water quality within the River begins to improve as the river flows through the sparsely populated counties in western OK. However, several discharges influence water quality in the remainder of the River in OK. The wastewater treatment facility for the City of Norman is the largest single discharge into the River in OK.

Poor water quality in the North Canadian River near Oklahoma City and in the Arkansas River at Tulsa also are believed to have contributed to localized declines in ARS populations. The North Canadian River from western Oklahoma City downstream to Eufaula Reservoir is considered to be the most nutrient enriched stream in OK (Pigg *et al.* 1992). The ARS has not been found in this section of the North Canadian River since 1975 (Jimmie Pigg, pers. comm. with K. Collins, 1997). In 1997, there were 623 active National Pollution Discharge Elimination System (NPDES) permits in Oklahoma. The majority of these were in the Arkansas River basin.

Some agricultural practices have contributed to water quality degradation in the Arkansas River basin, resulting in impacts to ARS aggregations. Agriculture can be a key contributor of nutrients, sediments, chemicals, and other types of non-point source pollutants, primarily due to runoff from range, pastureland and tilled fields. The U.S. Environmental Protection Agency (EPA) found that agricultural practices were the primary source of water quality impairment in both rivers and lakes and were responsible for the impairment of 72 percent of the stream miles assessed nationwide in 1992 and 25 percent in 1996 (USEPA 1994, 1998). The decline reported in 1996 was largely due to an expansion of the national estimate of total river miles to include nonperennial streams, canals, and ditches, which essentially doubled the total river miles surveyed since 1992 (USEPA 1998). Siltation and nutrient pollution were the leading causes of water quality impairment in both studies. Increased nutrients promote eutrophication of aquatic ecosystems, including the growth of bacteria, algae, and nuisance aquatic plants, and lower oxygen levels. For example, in July of 2003, an unintentional but unauthorized discharge of livestock waste entered the River near Oklahoma City, Oklahoma. In the ensuing fish kill, some 11,000 ARS perished.

Overgrazing of riparian areas also can affect ARS habitat. Overgrazing in riparian zones is likely to be locally detrimental and is one of the most common causes of riparian and water quality degradation (Kauffman and Krueger 1984). High livestock densities may result in excessive physical disturbances, such as trampling, and changes in water quality. Trampling of pool margins and thinning of vegetation from overgrazing induce changes in the plant community structure, species composition, relative species abundance, and plant density, which often are linked to more widespread changes in watershed hydrology. In addition to increased sedimentation, the most apparent effects on fish habitat are reductions of shade, cover, and terrestrial food supply, and the resultant increases in stream temperature, changes in water quality and stream morphology.

The overall trend in the status of the ARS has been characterized by dramatic declines in numbers and range despite the fact that this species evolved in rapidly fluctuating, harsh environments. None of the threats affecting the ARS have been eliminated since the species was listed. The ARS also remains vulnerable to those natural or manmade factors, such as the introduction of the Red River shiner or a prolonged period of low or no flow, which increase stressors to the population, further reducing population size. If recovery actions fail to reverse ARS declines, the species' vulnerability to catastrophic events such as accidental spills will increase.

Effects of the Action on the Species

The Service anticipates that the local population of ARS occupying that portion of the River within and immediately downstream of the action area would be adversely affected by the proposed project. These potential adverse effects may include the temporary loss of habitat due to the construction of temporary work roads and drilling platforms below the ordinary high water mark (OHWM) in the channel; stress, injury and death of individual shiners due to intense construction activity in the channel, including the fall of material into the channel during the demolition of the existing bridge; and stress and the temporary loss of habitat due to increased turbidity within the river during and following construction activities.

Work within the river channel would consist of placement of columns for the new bridge adjacent to the existing bridge, removal of the existing bridge deck and piers, and the construction of the bridge in the location of the old structure. The ODOT anticipates that phase I, the construction of the first bridge's new piers, columns, and abutments, would require 176 days. ODOT anticipates that phase II, the demolition of the current bridge, would take 2 separate actions, totaling 48 days. Phase III, the construction of the second bridge's new piers, columns, and abutments, would require 252 days. The total area of disturbance (including work roads, drilling pads, equipment placement, and incidental spillback from bridge removal) in the area of normal high water would be approximately 1.13 acres (0.46 ha). The removal and construction of piers and columns within the OHWM would occur outside of the peak spawning season and larval/fry development season of the ARS (May 1 – August 15).

The ARS is adapted to the shallow and moderately-turbid water typical of the sandy-bottomed rivers and streams inhabited by this species in the Arkansas River drainage (Bonner and Wilde 2002). The River varies in turbidity, with increases in turbidity occurring during periods of high precipitation and high river flow. As no construction activities associated with this project would occur below the OHWM of the River during the peak spawning season of the ARS, no adverse effects on ARS reproduction are anticipated. However, increased turbidity in the River at and downstream of the construction site may impact shiner feeding ability and the availability of food items, and may prevent shiners from using the area immediately downstream of the site.

Although moderate levels of turbidity may enhance the detection of prey by the ARS, the consumption of food items has been shown to decrease in highly turbid conditions (Bonner and Wilde 2002). In addition, a reduction in aquatic macroinvertebrates may occur as a result of increased sediment loads in the River, and this would be expected to reduce the availability of food for the ARS (Henley *et al.* 2000). The effect on the availability of aquatic invertebrate prey may be of short duration, however, as these organisms may rapidly return to the affected area; in addition, terrestrial and semiaquatic invertebrates may constitute a significant portion of the ARS diet (Jimenez 1999), and would be less susceptible to sediment loading in the channel.

Given the highly erodible nature of the riverbed and banks, increased sedimentation within the River likely will result from ground disturbance during intense construction activity in the channel, as well as from pedestrian and vehicular traffic in close proximity to the River, the installation, maintenance and removal of temporary erosion controls, and the fallback of debris into the river channel. Increased sedimentation may be anticipated to occur a reasonable distance downstream during and following the completion of construction. Sediment loading in streams resulting from highway construction has been shown to influence turbidity as much as 6.2 miles (10 km) downstream from the site of construction activity (Hainly 1980). As the River is naturally turbid and varies dramatically in flow rates, estimating the effects of this project with regard to sediment loading in the river would be difficult; however, based on Hainly's (1980) study, these effects are expected to influence conditions within the river to a maximum of 6.2 miles (10 km) downstream of the proposed project site.

Effects of the Action on Critical Habitat

The proposed action will result in unavoidable and potentially-adverse impacts to designated critical habitat for the ARS; these impacts may include the clearing of vegetation and topsoil from terrestrial areas of critical habitat lying within the proposed work zone, grading, and leveling activities (involving the excavation or placement of fill material), and the construction of erosion control structures and storm water diversionary channels; these activities are commonly conducted with heavy machinery. These activities may result in a temporary reduction in the terrestrial and semiaquatic prey items produced in the riparian zone and normally available to the ARS. In addition, project construction would involve other activities that could result in adverse impacts to aquatic areas of critical habitat within and downstream of the proposed work zone; these potential effects may include the temporary losses of habitat due to the construction of temporary work roads and drilling platforms within the wetted portion of the Canadian River channel, the fall of material into the channel during the demolition of the existing bridge, and increased turbidity within the river during and following construction activities.

The total permanent loss of critical habitat would be approximately 0.27 acres (0.11 ha). On the north side of the River, total permanent loss of critical habitat would be approximately 0.25 acres (0.10 ha). There would be an additional 0.11 acres (0.04 ha) of newly paved surfaces within critical habitat to accommodate the widening of the bridge approach, on the west side of the existing approach. Of this 0.11 acres (0.04 ha), 0.048 acres (0.02 ha) are currently maintained ROW. The remaining 0.085 acres (0.03 ha) consists of brushy upland forest. The new abutment and riprap would consist of approximately 0.14 acres (0.06 ha) of additional loss of critical habitat. On the south side of the River, total permanent loss of critical habitat would be approximately 0.02 acres (0.01 ha), due to the installation of three sets of new piers.

Temporary loss of critical habitat would occur related to work roads and drilling pads. These areas would occur within 10 feet (3.05 m) on either side of the new bridge. These areas would be revegetated back to their pre-construction condition and possibly improved to compensate for areas of permanent loss.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, and private actions that are reasonably certain to occur within the action area considered in this opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

The impacts of future State, local, and private actions are difficult to predict because they are dependent upon the political climate within the action area and conditions and changing patterns of economic and human population growth. The Service anticipates that decreased flow due to continued groundwater mining, introduction of non-native fish from anglers and potential spillage of pollutants likely will continue to occur in the future. These activities are likely to continue to depress ARS populations to varying degrees.

Conclusion

After reviewing the current status of the ARS, the environmental baseline for the action area, the effects of the proposed bridge construction, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to *jeopardize* the continued existence of the ARS and is not likely to destroy or *adversely modify* federally-designated critical habitat. However, construction of the new bridge and related activities may result in the incidental take of ARS and adverse impacts to designated critical habitat.

As stated above, principal effects of the project involve alteration of instream habitat and possible mortality of individuals during placement of temporary work road, drilling platforms, and incidental spillback from bridge demolition. The project could alter 1.13 acres (0.46 ha) of habitat (within the OHWM) which is only a small fraction of available ARS habitat in the River.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 7(o)(2), taking that is incidental to, and not intended as a part of the agency action, is not considered to be prohibited take under the ESA provided that such taking is in compliance with the terms and conditions of an Incidental Take Statement.

The measures described below are non-discretionary and must be undertaken by the FHWA and/or its designated representative (ODOT) so that they become binding conditions of any grant or permit issued to the ODOT, as appropriate, for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA and/or the ODOT 1) fails to assume and implement the terms and conditions or 2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FHWA and/or the ODOT must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(I)(3)].

Amount or Extent of Take Anticipated

Several factors may make detection of incidental take under field conditions difficult. For example, finding a dead or impaired specimen is unlikely because the species has a small body size and is difficult to detect under most conditions. Even when detected under these conditions, capture of such individuals may be unlikely. In some instances, sublethal physiological effects may be delayed or not readily apparent in captured individuals. Despite these constraints, the Service is obligated to describe the amount or extent of such anticipated incidental take based on the amount of occupied habitat that is disturbed.

The Service anticipates that any ARS residing within the action area could be taken as a result of the proposed action; however, the extent of take is difficult to accurately assess due to the nature of the take and the unknown abundance of the species within the action area. Therefore, take will be determined based on the description of activities expected to affect the species as described in the biological assessment and using habitat area as a surrogate for the species. Incidental take is expected to occur in the form of harassment, wounding and/or killing.

The Service believes that take related to construction activities within the River is reasonably certain to occur. Those activities include the placement of work roads, equipment, drilling pads, and incidental spillback within an area of the OHWM totaling approximately 1.13 acres (0.46 ha). Thus, take of the local population of ARS is likely to occur within the aforementioned area, and is not to exceed a total of 1.13 acres (0.46 ha) in size within the OHWM. Although habitat outside of the disturbed areas would be indirectly impacted by the project, this alteration is not anticipated to have any significant adverse impact on the species.

Effect of the Take

In the accompanying Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of ARS.

1. During low flow conditions, work roads shall be constructed in a manner such that stream flow is maintained. During these low flow conditions, it is possible that the placement of a work road could temporarily impede flow and create isolated pools downstream of the structure. To ensure flow is not impeded and isolated pools do not develop, the channel will be artificially routed around the work road and back into the existing channel just downstream of the road.

2. Construction activities within the OHWM, including placement of the work roads, drilling platforms and removal of the existing bridge, will be prohibited from May 1 through August 15, when peak spawning occurs (May through July) and when developing ARS larvae and fry are highly susceptible to disturbance (May through August 15).

3. The area of disturbance, due to the construction of work roads and drilling platforms, and from incidental spillback during bridge removal, will be minimized to the greatest extent practicable. Additionally, the amount of vegetation cleared should be limited to the greatest extent possible.

4. Vehicles or other motorized equipment shall be confined to areas outside of the wetted channel of the River, with the exception of activities related to work road construction and use. Once the use of the first work road is complete, motorized equipment shall not be driven through the wetted channel. The existing bridge (SH-3W) shall be used to transport equipment from one side of the River to the other.

5. After use of each work road is no longer needed, fill material shall be removed and the natural contours of the river channel and bank restored to the maximum extent practicable.

6. Appropriate Best Management Practices, as established by the Oklahoma Department of Environmental Quality to minimize impacts from storm water discharges, shall be incorporated into the project specifications and included as part of the project plans.

7. Vegetation shall be established in areas disturbed during project construction as soon as possible following construction with an appropriate mix of plant species native to the project site.

8. Hazardous materials, chemicals, fuels, lubricating oils, and other such substances shall be stored at least 100 feet outside of the OHWM. Refueling of construction equipment also shall be conducted at least 100 feet outside of the OHWM.

9. Water shall be obtained (if required for construction purposes or to water seeded/sodded areas) from a source other than the River.

10. Temporary work roads and drill pads should not result in erosion and sedimentation of the river or alteration of the river bed or bank substrates. Work roads and drill pads shall be made of crushed non-erosive rock material that is free of any fines, clays or silts and of sufficient size to prevent downstream movement.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of section 9 of the ESA, the FHWA and/or the ODOT must comply with the following terms and conditions which implement the reasonable and prudent measures described above and outline the reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. The contractor(s) employed for the proposed work will attend a pre-construction meeting which will include specific instruction on the implementation of reasonable and prudent measures included in this incidental take statement.

2. Specific instructions to the contractor(s) with respect to implementation of reasonable and prudent measures will be incorporated through written documentation and included in the project plans. A figure showing the project boundary of the allowed disturbance under the incidental take statement will be included in project plans. This figure and the reasonable and prudent measures will be posted and available on site at all times during construction.

3. The OHWM and the upstream and downstream project boundaries shall be clearly marked for ground crews to observe.

4. The FHWA and/or the ODOT will monitor the extent of take through sufficient on-site inspections scheduled to coincide with those activities anticipated to result in take throughout the duration of the action. Monitoring will include the following:

    a. Estimating the area of disturbance caused by construction of work roads and drilling platforms and by incidental spillback from bridge removal, following completion of each road, drilling platform, or bridge removal. If areas within the OHWM are disturbed more than once, the area of disturbance should be calculated appropriately. For example, if a work road approximately 0.5 acres in size was washed out during high flows and rebuilt, the total area of disturbance caused by the building of the work road would be 1.0 acre.

    b. Monitoring stream flows visually, both upstream and downstream of the action area to ensure that stream connectivity is maintained throughout the duration of the project. If it is anticipated that stream connectivity may be lost, the OKESFO shall be contacted immediately. Field biologist(s) from the OKESFO will consult with the ODOT's biologist(s) to determine what, if anything, can be done to restore connectivity. In some cases, natural conditions, not related to project activities, could lead to a loss in stream connectivity, in which case no further action would be necessary. If biologists determined that connectivity may be restored, the channel may be artificially routed to restore connectivity;

c. Pre-construction inspection of erosion and sedimentation controls and post-construction inspection once a month and following precipitation events of 0.5 inches or more. Effectiveness of erosion controls will be maintained for the duration of construction activities; and

d. Monitoring duration of work roads, drilling platforms, and bridge removal within the OHWM.

5. Reports of on-site monitoring mentioned above shall be submitted to the OKESFO on a bi-monthly basis. If the individual(s) monitoring activities anticipates that take may be exceeded, the OKESFO should be immediately contacted, before construction activities continue.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans or develop information. Implementation of these measures would further help to minimize effects to the ARS.

The Service recommends that the FHWA and ODOT contribute to the continued survey efforts of the ARS. These survey efforts are used on a regular basis by FHWA and ODOT for endangered species consultations on a wide variety of construction projects across the state of Oklahoma. Contributions could be made in the form of funding the Oklahoma Department of Wildlife Conservation or the Service for the surveying work, providing biological staff as field support during surveying, or funding the identification of field samples collected during surveying.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

Reinitiation Notice

This concludes formal consultation on the action outlined in your biological assessment. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending reinitiation of consultation.

The Service appreciates the cooperation extended by FHWA and ODOT during this consultation. If further assistance or information is required, please contact Angela Brown Burgess or me at the above address or telephone (918) 581-7458.

Sincerely,

Dixie Bounds

Dixie Bounds, Ph.D.
Field Supervisor

cc: Regional Director, FWS, Albuquerque, NM
Natural Resources Section, ODWC, Oklahoma City, OK

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